

REMARKS

In the Office Action mailed on November 25, 2009, a new Abstract was required due to problems with length, format, language, clarity and grammar. Claims 1 and 2 were rejected under 35 USC § 112, second paragraph, for issues with clarity, grammatical errors, insufficient antecedent basis for claim limitations, etc.. Claims 1 and 2 were also rejected under 35 USC § 102 as allegedly being anticipated by International Patent Application Publication WO 2004/041468 of Tomizawa et al (“Tomizawa”). Claims 1 and 2 were further rejected under 35 USC § 103 as allegedly being obvious over US Patent No. 6,216,509 to Lotspaih et al. (“Lotspaih”) in view of US Patent No. 4,449,281 to Yoshida et al. (“Yoshida”).

In this paper, Applicants have amended the Abstract to use proper terminology, to clarify the meaning and to reduce the length in response to the requirement for a new abstract. Support for the amendments to the Abstract appear throughout the specification as originally filed. Applicants submit that the amendments to the Abstract introduce no new matter.

Applicants have also canceled claims 1 and 2 and introduced new claims 3 and 4. Applicants respectfully submit that new claims 3 and 4 are in proper form, are definite, and particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Support for the claim amendments appears throughout the text of the specification, the drawings, and the originally filed claims. For example, support for new dependent claim 4 may be found, at least, in the English translation of PCT/EP2004/008727 filed on Feb. 13, 2006, from the last paragraph on page 2 to the first paragraph on page 3, which corresponds to paragraph [0005] in the International Patent Application Publication No. US 2007/0180677 (“the published application”). No new matter has been introduced in the claim amendments.

In view of the amendments to the claims and the Specification, together with the following remarks, Applicants request reconsideration and withdrawal of all objections and rejections.

Response to Requirement for a New Abstract

As explained above, Applicants amended the abstract to use proper terminology, to clarify the meaning of the abstract and to reduce the length of the abstract. Applicants have addressed the Examiner's requirement for a new abstract and respectfully request reconsideration and the withdrawal of this requirement.

Rejections under 35 U.S.C. § 112, Second Paragraph

The Office Action rejected claims 1 and 2 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As explained above, Applicants canceled claims 1 and 2 rendering this rejection moot. Nevertheless, Applicants respectfully submit that new claims 3 and 4 particularly point out and distinctly claim the subject matter which the Applicants regard as their invention. Applicants submit that new claims 3 and 4 are definite, free from grammatical and idiomatic errors, and in proper form.

Response to Rejections under 35 U.S.C. § 102

The Office Action rejected claims 1 and 2 under 35 U.S.C. § 102 (b) as allegedly being anticipated by International Patent Application Publication No. WO 2004/041458 A1 of Tomizawa et al. ("Tomizawa"). Although Applicants have canceled claims 1 and 2 rendering this rejection moot, Applicants respectfully submit this rejection is based upon a clear legal deficiency and thus is improper. Specifically, Tomizawa does not qualify as prior art because Tomizawa is not in the prior art under 35 U.S.C. §§ U.S.C. 102 (a), 102 (b) or 102 (e).

Tomizawa is not available as prior art under 35 § U.S.C. 102 (a) because Tomizawa was not published before Applicants' priority date. Applicants claim priority to German Patent Application DE 103 37 383.7 filed on Aug. 13, 2003. Tomizawa published on May 21, 2004. As a result, Tomizawa is not available as prior art under 35

§ U.S.C. 102 (a). Applicants further note that other patent publications within the same family of Tomizawa also fail to predate Applicant's priority date.

Tomizawa also fails to qualify as prior art under 35 § U.S.C. 102 (b) because Tomizawa was not published more than one year prior to the U.S. application date of the pending application. Applicants' U.S. application date is Aug. 4, 2004, which is the international filing date of PCT Application No. PCT/EP04/08727. (See 35 U.S.C. § 363 and PCT Article 11, which provide that the date of the application in the U.S. of a national phase of a PCT application is the international filing date of the PCT Application.) As Tomizawa published on May 21, 2004, which is less than one year before Applicant's U.S. application date of Aug. 4, 2004, Tomizawa fails to qualify as prior art under 35 § U.S.C. 102 (b). Applicants also note that the corresponding Japanese patent publication to Tomizawa, JP 2004202571 (A), which first published on July 22, 2004, fails to predate Applicant's U.S. filing date (Aug. 4, 2004) by more than one year. As a result, the corresponding Japanese patent publication by Tomizawa is also not available as prior art under 35 § U.S.C. 102 (b).

Further, Tomizawa, a WIPO publication in Japanese, is not available as prior art under 35 § U.S.C. 102 (e). Under 35 U.S.C. § 102(e), a WIPO publication of an International Application (IA) only qualifies as a reference if the IA was filed after Nov. 29, 2000, the IA designated the U.S. and the WIPO publication was in English. (See MPEP 706.02(f)(1) and MPEP 2136.03.) Thus, Tomizawa is not available as prior art under 35 § U.S.C. 102 (e) because the Tomizawa is a WIPO publication in Japanese and not in English.

Accordingly, Applicants respectfully request that all rejections based on Tomizawa be withdrawn as Tomizawa is not prior art.

Response to Rejections under 35 U.S.C. § 103

The Office Action rejected claims 1 and 2 under 35 U.S.C. 103(a) as allegedly being unpatentable over Lotspaih in view of Yoshida. Applicants respectfully disagree. Although Applicants have canceled claims 1 and 2 rendering this rejection moot,

Applicants offer remarks below in support of the patentability of new claims 3 and 4 over Lotspaih and Yoshida, alone or in combination.

As illustrated for an exemplary embodiment in Figs. 1-3 of the pending application, new independent claim 3 is directed to a method for shaping a conical tube (5) made with metal using a tool (1) having a die cavity (2) with a complex contour and cylindrical portions (2a, 2b) at opposite ends of the cavity. The conical tube (5) is inserted into the cavity (2) such that each end of the conical tube (5) protrudes into a cylindrical portion (2a, 2b) of the die cavity, as shown in Fig. 1. For each end of the conical tube (5a, 5b), a sealing piston (3, 4) engages the end of the tube (5a, 5b) to press the end until the end of the conical tube abuts the cylindrical portion (2a, 2b) of the die cavity forming a sealed interior space of the conical tube, as shown in Fig. 2. Pressure is applied to the sealed interior space (5) of the tube and the tube is simultaneously axially compressed by each sealing piston (3, 4) exerting an axially directed force on a face of an end (5a, 5b) of the tube. During the step of applying pressure, at least one of the ends (5a, 5b) of the tube is displaced such that it no longer protrudes into a cylindrical portion of the die cavity (2a, 2b), as shown in Fig. 3.

The application notes that “[i]n the internal high-pressure shaping of tubes, relatively high degrees of shaping may be achieved if material is axially redisplaced during radial flaring of the tubes,” but that “[i]n the case of conical tubes, . . . the redisplacement is not easily possible for geometrical reasons.” (*See* the published application, paragraph [0002].) Example embodiments of the invention permit axial redisplacement of one or both ends of a conical tube simultaneously with applying high pressure to the internal space of the conical tube, which may permit a relatively high degrees of shaping.

In contrast to Applicants’ claims, Lotspaih discloses a hydroforming die that does not have cylindrical end portions, and rams that seal ends of a conical tube to form a closed chamber. After the closed chamber is formed, the fluid pressure inside the closed chamber is increased, but the ends of the conical tube are not axially displaced during application of this pressure because of geometrical constraints, namely that each end of the conical tube is pressed between a ram and the interior wall of the die thereby

preventing axial displacement of the end with respect to the interior wall of the die. (*See* Lotspaih, Fig. 3; col. 5, lines 2-10.)

Yoshida is directed to a method of forming a double-wall composite pipe by applying water pressure to an inner pipe and elastically expand the inner pipe at the same time as an outer pipe is locally heated to cause the outer pipe to expand in diameter as well. After the heating of the outer pipe ceases and the pressure is relieved from the inner pipe, an interference fit between the inner pipe and the outer pipe is obtained. (*See* Yoshida, Abstract; col. 2, lines 45 to 65; col. 3, lines 22-32.) Closing plugs are applied to the ends of inner pipe which press the inner pipe against the outer pipe to seal the inner pipe. (*See id.* at column 2, lines 25-44; Fig. 3.)

Applicants respectfully submit that new independent claim 3 is patentable over Lotspaih and Yoshida, because Lotspaih and Yoshida, alone or in combination do not disclose, teach or suggest each and every element of claim 3. For example, Lotspaih and Yoshida, alone or in combination do not disclose, teach or suggest, “inserting the conical tube . . . into the die cavity of the tool such that a first tube end protrudes into the first cylindrical portion of the die cavity and a second tube end protrudes into the second cylindrical portion of the die cavity,” as required by claim 4.

Although the Office Action asserts that Lotspaih discloses pressing “the tube ends against the wall of cylindrical portions at the two ends of the cavity,” Lotspaih does not disclose, teach or suggest a die cavity with a complex contour having cylindrical portions at the ends. Instead, Lotspaih shows and describes a hydroforming cavity having a roughly conical shape. (*See* Lotspaih; Fig. 3.) Lotspaih cannot disclose inserting the conical tube into the die cavity of the tool such that ends of the conical tube protrude into cylindrical sections of the die cavity because Lotspaih does not disclose a die cavity with cylindrical sections.

Yoshida fails to cure this deficiency of Lotspaih, because Yoshida does teach suggest or disclose any die cavity. Instead, Yoshida discloses an inner tube and an outer tube, both of which are expanded to create an interference fit. (*See* Yoshida, Abstract; Fig. 1.) An outer tube that undergoes significant dimensional changes during processing to achieve an interference fit with an inner tube is not a tool having a die cavity.

As another example, Lotspaih and Yoshida, alone or in combination do not disclose, teach or suggest, “wherein during the step of applying pressure to the interior space of the conical tube and simultaneously axially compressing the tube, the first tube end is displaced until the first tube end does not protrude into the first cylindrical portion of the cavity . . . ,” as required by claim 3.

Lotspaih does not disclose displacing an end of the conical tube during a step of applying pressure to an interior space of the tube and simultaneously axially compressing the tube because the conical shape of the die cavity of Lotspaih blocks the rams that that seal the ends of the tube from being advanced substantially further into the cavity after the cavity is sealed forming a closed chamber. In Lotspaih, the rams are advanced into the cavity to seal the conical tube forming an interior chamber, and then increased fluid pressure is applied to the interior chamber. The rams of Lotspaih cannot be advanced further into the closed chamber while the increased fluid pressure is applied due the a surface of the conical shape of the die cavity physically blocking a corresponding surface of each ram from advancing further.

Yoshida fails to cure this deficiency both because Yoshida fails to disclose a die cavity having cylindrical portions and fails to disclose an end of a tube that is displaced during application of increased pressure relative to the cylindrical portions of the die cavity. With respect to the latter, Yoshida discloses using plugs to hold the ends of the inner tube against the outer tube while fluid pressure is applied to the inner tube. (*See* Yoshida, Fig. 3.) Yoshida discloses pinching the inner tube between the plug and the outer tube to form a seal. Thus, an end of the inner tube cannot be displaced during application of the fluid pressure because it is “trapped” between the plug and the outer tube.

As explained above, Applicants respectfully submit that the Abstract and claims 3 and 4 are proper. Applicants respectfully note that Tomizawa is not prior art to the pending application. Applicants further submit that new independent claim 3, and claim 4 which depends therefrom, are definite and are patentable over Yoshida and Lotspaih, alone or in combination. Accordingly, Applicants respectfully request that the Examiner withdraw the rejections and pass the claims into allowance.

CONCLUSION

In view of the foregoing, it is respectfully submitted that this application is now in condition for allowance. For the reasons detailed herein, Applicants respectfully request that all rejections be reconsidered and withdrawn, and that the claims be passed into allowance. Should the Examiner have any questions, comments, or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact Applicants' representative by telephone at the number indicated below.

Respectfully submitted,

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